PROFESSIONAL DEVELOPMENT BY E-LEARNING: EXAMPLES OF EFFECTIVE REMOTE INTERNSHIP MODELS

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Summary

In today's (networked) business environment, more and more collaboration takes place through virtual platforms and tools, be it proprietary or open source Web 2.0. For students to experience the practice of virtual cooperation the development of professional skills and ICT competence, by working in virtual teams, is recommended. Students however lack a high-level experience of online working in their education and feel accordingly deprived when starting their profession. For students to gain a firsthand experience in online working, placements for gaining ICT and domain experience are needed, which suit the needs of flexible learners. We refer to them as: remote internships.
This paper explores the application of the concept of remote internships in relation to professional working situations. Internship collaboration models are described and assessed. Research has been conducted by platform of the Virtual Environmental Consultancy (VEC): a didactic model in which learning and work experience have been fully integrated using distance modality delivery.

1. Introduction

In today's global and multinational business environments, collaboration in virtual teams holds a position in its own right. More and more collaboration takes place through virtual platforms, be it the internal proprietary of the firm or institution, or open source Web 2.0. Effective collaboration models in virtual business teams differ from onsite collaboration experiences (Dekker et al., 2008). Students however lack the so needed experience with online working in teams as part of their education and therefore as part of their professional development. For students to gain a firsthand experience in online working, remote internships are needed. Moreover, remote internships are an instrument for life-long learners to gain practical experience since physical internships are not so common in distance education.
This paper explores the application of the concept of remote internships in relation to professional working situations in teams. Internship collaboration models are described and assessed. Research has been conducted by platform of the Virtual Environmental Consultancy (VEC): a didactic model in which learning and work experience have been fully

integrated using distance modality delivery. This paper presents the results as designed, carried out and analysed by the authors within the framework of the project Cross Sector Virtual Mobility (CSVM). The full results of the CSVM project are published in van Dorp (2008).

2. Remote internships

According to van Dorp (2008), remote internships could best be defined as "field-driven assignments designated to students by third parties, i.e., public or private organisations in which students work for the most part off-site and on flexible hours, herewith utilising generic and/ or specific information and communication tools". The 'remote' or off-site component and the flexibility of working outside office hours are differentiating characteristics as compared to mainstream university placements. In conventional internships, students normally work on-site (at the premises of the public/private company at which the assignments are carried) and during the opening hours of this company (in general, regular office hours).

Because of the features of remote internships i.e., the flexibility in pace, place and time, flexible modality or virtual internships specifically suit the needs of students in distance education. These needs meet the particular characteristics of Open and Distance Teaching Universities compared to mainstream universities, as set out by van Dorp and Herrero (2008). Open and Distance teaching universities focus on off campus students and on learning modes in which place and time (and pace) are flexible variables, whereas mainly campus-based universities focus on young (18-24) student cohorts and face-to-face learning. The model of remote internships is therefore an advantageous model, which can facilitate distance education students to enter online working and stimulate their employability.

3. Professional development by remote internships

Be it physical or virtual modes of placement, internships are useful instruments in professional learning: they bring students in open contact with the professional field and fulfil the needs of professional development and work experience. Not only professional development is facilitated, also inter-institutional knowledge exchange. The internship student is a key asset in the knowledge transfer from the academic community towards the professional domain. Reciprocally, internships also stimulate knowledge transfer from the company to the academic domain of research.

Remote Internships, as being an e-learning model of professional development by workplace learning, bridge requirements of employer's when discussing placement possibilities in open and distance teaching. Remote internships are of special interest in open and distance teaching, as here barriers to conventional placements exist. These barriers are also inherent in the choice made by students for this type of education. Van Dorp (2008) lists these barriers as related to (1) the work situation (studying in their spare time), (2) their personal properties and circumstances (not able to apply for full time study); (3) geographical imbalance (between home and city of study/internship); (4) financial constraints (part-time, facultative enrolment); and (5) embedding (in their own professional work situation).

This fifth barrier could be both a barrier and an advantage. A barrier is that the academic freedom as well as the academic level could be at risk; whereas, the combination of swiftly combining both internship and professional job in the same workplace, is efficient.

Another advantage of remote internships, and a good reason to implement remote internships in conventional education, is today's global and multinational business environment, in which collaboration in virtual teams holds a position in its own right. Effective collaboration models in virtual business teams differ from onsite collaboration experiences (Dekker et al., 2008). Study on critical interaction behaviours among collaborating people in global virtual teams, learned that extra attention is needed on cultural differences, also across Belgian and Dutch national cultures (Dekker et al., 2008). Students, both in conventional and open and distance education, however lack the so needed experience with

online working as part of their education and therefore as part of their professional development.

4. Description of the pilot research

This section describes the findings of the evaluation of the remote internship pilot case at Open Universiteit Nederland on the model of virtual collaboration to enhance students' professional development.

The remote internship pilot is carried out on the virtual platform in the Virtual Environmental Consultancy (VEC), a didactic model in which learning and work experience have been fully integrated in a distance learning environment. The VEC, described by Ivens et al. (2007), offers a flexible, networked learning environment that resembles an authentic professional situation and is developed to meet the end-terms of Bachelor of Science programmes in the Environmental Sciences. Students and teachers working in the VEC, carry out real projects for real external clients, resulting in professional advice reports on environmental and sustainability issues. Ivens et al. (2007) describes the internship model with two parallel processes, according successive 'plan-do-act-check' cycles, fully integrated in the didactic model (fig. 1). The project development process, in which students work in virtual teams, focuses on delivering high quality products to the external clients. The virtual teams are guided by the group itself (computer supported collaborative learning; CSCL), coached by an environmental science lector at the university and communicate with the external client about (intermediate) project results. The other process on enhancing the personal development at an individual level, scaffolds the intern with personal development plans, self- and peer reflection and personal coaching. This consultancy model of remote internships by virtual teams also facilitates inter-institutional knowledge exchange (fig. 1). The model is based on previous experiences gained at the OUNL with the concept of virtual companies (Westera & Sloep, 1998; Westera et al. 2000).

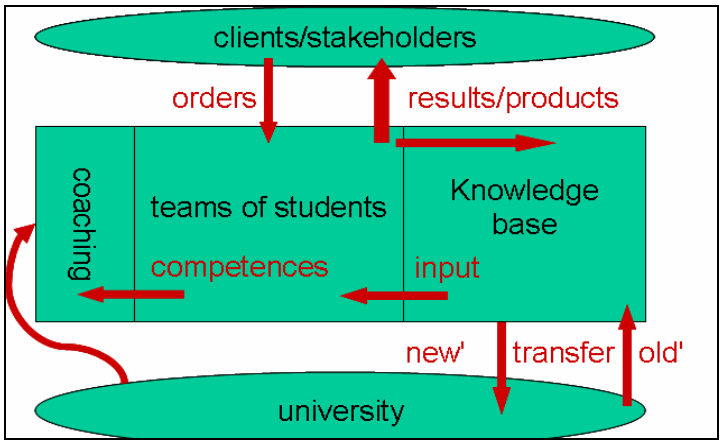

Figure 1. Integration of the Project development process (on team products) and Personal development process (on individual competences) in the didactic model of the Virtual Environmental Consultancy (Ivens et al., 2007), also facilitating inter-institutional knowledge exchange.

The research methodology was devised to evaluate the remote internship pilot case on reaching the CSVM objective(s) of enhancement of student employability. A questionnaire, developed by the authors of this paper, was used on measuring students' employability by self-reporting by the students, by the academic lecturers and the external clients. The test criteria used to assess employability are based on similar criteria used in the parallel inventory of physical internships (Jasinska et al., 2006) and on the CSVM project objectives (van Dorp, 2008). The questionnaire consisted of self-completion tests on 8 different classes of variables (Table 1): The lecturers and the clients were asked to fill out only the three classes of major relevance in assessing students' employability; students fill out all.

In addition to the questionnaire on employability, data (marks) are retrieved from the stated protocol to assess the learning outcomes. This protocol is based on peer-, team- and individual assessments during the internship and a final assessment by lecturer and the client.

Table 1. The 8 classes of variables, with the classes 5, 6 and 7 (in bold) of major relevance in assessing students' employability

No.	Assessed by Student (S), Tutor (T) or Mentor (M)	Class of variable
1	S	Information on the student
2	S	Internship assignment and course/module
3	S	On-line learning environment
4	S	Manual on the internship course of studies
5	**S, T, M**	**Quality of the internship**
6	**S, T, M**	**Communication during the internship**
7	**S, T, M**	**Quality of the support & supervision**
8	S	Interaction & communication with fellows

5. Results

The assessment of the CSVM objective to enhance students' professional development on the remote internship pilot, resulted in (1) a clear, didactic description of the collaboration model of the remote internship, (2) a classification of the collaboration model compared to theoretical models on internships (van Dorp, 2008), and (3) a qualitative measurement of the enhancement of students' professional development.

Description of the remote internship model in the pilot

As a first result of the study, the remote internship model of the Virtual Environmental Consultancy is described in terms of actors (student, university's lecturer as tutor, client/employer as mentor), processes (learning, didactic/instructional and organizational activities), contents (domain, assignments) and results (assessment results of the evaluation of team and individual products).

Students that took part in the OUNL remote internship pilot could be considered as typical distance student population, as concerns the Open Universiteit Nederland: working professionals in their ages ranging from 25 to 50 years (mean: 40 y), finalising their BSc in Environmental Sciences part-time (10-32 hours weekly, during 16 weeks), mainly because they seek to migrate or switch careers (Table 2).

Table 2 Student activities and time distribution (during 16 weeks)

Time spent on studying	none	between 1-10 hours weekly	between 10-20 hours weekly	between 20-32 hours weekly	more than 32 hours weekly
Study time, in hours studying	—	1	8	4	—
other activities combined with study					
Work (a job or driving an enterprise)	2	—	—	3	7
Family care activities (child care, housekeeping, etc)	—	7	3	1	1
Leisure and voluntarily activities (sports, hobbies, volunteer's activities)	2	9	2	—	—
Time spent on the internet					
Internet use, in hours working	—	6	6	—	1

The OUNL pilot accounts for the participation of 13 students (5 Belgian (Flemish) and 8 Dutch), 6 tutors, 5 external employer mentors, in 5 different remote internship projects.
The students worked on the following three projects (Table 3) of which two (#2, #4) were recruited through the CSVM European portal for clearing remote internships (http://matchmaking.eadtu.nl) (van Dorp, 2008). The majority of students characterized their internship as a research internship, instead of a work placement internship.

Table 3: Remote internships projects (each carried out by a virtual team of 3-4 students) in the OUNL pilot

Project #	**External client**	**Environmental advise**	**Final grade** (Dutch grading system)
1	CSO consultancy firm	An inventory on information (need and quality) required for subsurface spatial planning in dense populated areas (Netherlands)	M: 6.8 T: 8.0
2	Regional Centre of Expertise Rhine-Meuse on Learning for Sustainable Development	A planning methodology and an inventory of sustainability subjects in regional planning of regions.	M: 8.5 T: 8.9
3	Laboratory of Ecological Risk Assessment of the National Institute for Public Health (RIVM/LER)	A pre-study for field research on the impact of the combined effect of chemical stressors ecosystems, based on biological monitoring data on water quality.	M: 7.2 T: 6.7
4	Dutch Limburg Industrial Water Association/ Chamber of Commerce Limburg	Inventory of changed water quality standards under the EU Water Framework Directive and its consequences for (physical and chemical parameters of) industry water effluent, for industrial water users in	M: 6.4 T: 6.8

			Limburg.	
5	Open Universiteit Nederland		Development of a university sustainability monitor (in distance education	M: 7.8 T: 7.4

Dutch grading system: marks range from a 1 to 10, in which below 5.5 is insufficient (outliers 1, 2, 3 & 4) and 9 and10 are the excellent outliers
M = graded by the mentor at the employer; T = graded by the academic lecturer or tutor

The virtual teams carrying out the remote internships were facilitated by a professional webbased collaborative workplace environment (EMC Documentum eRoom®), in which learning and working has been fully integrated in the intern personal and group communication of student-to-student and student-to-tutor vice versa. This environment provided the off-site interns with access to virtual workspaces, tools and communication facilities, hosted by the university. The research pointed out that such a virtual platform seems to play a crucial role in the interaction between all parties. Communication between the intern's student team and the mentor at the employer's was on a regular (weekly) basis by e-mail and face-to-face at start and at the final oral and written presentation of the consultancy advice.

Comparing internship models

As a second result of this study, the findings made it possible to classify the collaboration model compared to theoretical models on virtual and physical internships (van Dorp, 2008), in order to be able to make recommendations on effective remote internship models.

In the Open Universiteit pilot, the interaction and communication structures (tools, products, assessments) between student and students' team on one side and the tutor of the university and the employer's mentor on the other side were more explicitly and formally designed. The explicit choice in this didactic model to work collaboratively in virtual teams is made both to ameliorate the mutual support of the interns and to enhance their professional development in collaborative working and task-directed planning. The use of communication tools, and the frequency of communication, are an important indicator for the kind of supervision received (Table 4). The contact with the mentor was less than with the academic lecturer. Most students found the supervision by the client's mentor beneficial.

Table 4 Use of communication tool in supervision by MENTOR (according to STUDENTS)

Use of communication tool in supervision by MENTOR	never	rarely	monthly	weekly	q…times (daily)
face-to-face meetings	1	9	3	—	—
telephone (landline)	5	3	2	2	—
GSM/mobile phone use	11	2	1	—	—
e-mail	2	7	4	1	—
instant messaging or chat (f.e. by MSN Live of Skype chat)	10	2	1	1	—
skype or other internetphone = VOIP, voice over IP (f.e. Skype)	8	4	1	—	—
webcam communication	13	—	—	—	—
online video conferences	13	—	—	—	—
Online document sharing (working online with a peer on the same file)	11	1	1	—	—
On the university's online learning environment (like Blackboard, Moodle, e-room etc)	9	—	1	3	—
On the employer's working platform or project/group environment	10	2	1	—	—

Students' employability

As a third and overall result of the pilot study a qualitative measurement of the enhancement of students' professional development was made. The research results focus on the (perceived) quality of the remote internship from the perspectives of the student (Table 5), the tutor and the mentor. The students, tutors and mentors did agree in marks (grades) and on indicated criteria that the internships made a positive contribution to the understanding of the subject, a clear indication of professional development. Quite a number of students (Table 5) indicated that the internship assignment was not clearly formulated; perhaps because students were not fully aware of the fact whether they had related theory to the workplace assignment during the internship.

Table 5 Judgment on the quality and contents of the internship assignment (according to STUDENTS)

Judgement on the quality and contents of the internship assignment	completely disagree	disagree	neutral	agree	completely agree
The internship assignment was clearly formulated.	1	4	4	3	—
The students' knowledge was sufficient to carry out the internship assignment	—	2	4	6	—
The student had sufficient time to finalize successfully the internship assignment	1	2	3	6	—
The internship assignment has developed the students' ability to relate theory to the workplace	—	2	5	5	—
The internship assignment made a positive contribution to the students' understanding of the subject	—	—	1	9	2
The supervision and support of the academic tutor during the internship assignment was beneficial.	—	3	2	6	2
The supervision and support of the employers' mentor during the internship assignment was beneficial.	—	3	3	5	2

6. Conclusion

Main conclusion on the approach for stimulating student employability by remote internship model with virtual team work is that the internship assignments enhanced the students' understanding of the subject as well as their ability to relate theory to the workplace.

Effective communication between student, tutor and mentor is especially important in remote internships. The explicit choice in this didactic model of the Virtual Environmental Consultancy to work collaboratively in virtual teams functions well: the collaborative working on a clear assignment result (external advice) between students was good and facilitated mutual support of the interns. Moreover the virtual teamwork enhanced their professional development in collaborative working and task-directed planning. Not investigated is if they did develop their competences according their personal development scheme and if the different cultural and professional qualities were shared in the virtual teams, enhancing personal employability and satisfaction.

Several barriers exist in the transferability of the concept of internships to Open and Distance Teaching Universities which makes it a real challenge. It has been shown that remote internships are good alternatives and can actually replace conventional internships for the development of students' professional competences. It can be concluded that employability, as defined by Harvey (1999) being "employability of a graduate is the propensity of the graduate to exhibit attributes that employers anticipate will be necessary for the future effective functioning of their organisation" can be enhanced by remote internships as described.

7. Future outlook

Offering remote internships on real projects for real external clients will surely motivate students, as was seen in the Virtual Environmental Consultancy. Moreover, the working in virtual teams in the VEC was good and facilitated mutual support of the interns, meanwhile stimulating their professional development. Therefore, remote internships in a consultancy model by virtual teams of students are recommendable, but as these students are working professionals, the individual student could experience some lack of freedom in pace of study.
From the findings of the VEC pilot, we have learned that the design of effective communication in the student – tutor – mentor triangle is essential: plan the communication tasks and tools of students, tutors and mentors clearly and formally (as part of the assessment protocol).
According to Dekker et al. (2008) effective communication is important in global virtual teams, with remarkable better results if each individual is online working with the other team members, compared to virtual teams with some members working at a same location. This is an advantage in open and distance learning, in which dispersed located student members in virtual teams are common, and makes it a real challenge in the transfer of such a global business experience from distance to conventional education.

The methodology to assess post-pilot success could be used to assess distinct internship models at different learning/working modalities in future research projects. The evaluation of next OUNL internships continues according this method, as an addition to the common quality assurance procedure.

The design of the communication structures with the employers in remote internship models is of concern for the further development. In conventional internship models the main interaction on the field-driven assignment is on-site at the intern's workplace at company, with 'daily' contact. But in remote internship models, daily communication between the virtual 'intern' and the employer is not self-evident. In the VEC remote internship model, a consultancy model was used with 'daily' communication within the simulated consultancy firm (the students of all virtual project teams and their tutors) and only external client consultation on intermediate and final results. The intern did not have access to the client company's proprietary virtual platform and the student-client contacts were mostly by e-mail on a weekly basis. Although the absence of daily work floor contact could be seen as a severe barrier to obtain professional competences, the professional development as assessed in the pilot study was clearly enhanced. An explanation could be that experiencing 'daily business' by embedding on a work place is of less importance to these specific group of distance students in remote internships, as they are working professionals and therefore daily 'embedded' in a professional working context. This is an indication that partly professional attitudes and skills could be transferable by migration to an (academic) profession in other field: an indication of cross sector mobility.

As the use of mobile and flexible working by teleworking is becoming more common in companies (seen the emergence of mobile internet), both remote and physical internships models seem to converge. The physical intern working offsite the company's premises, on office and off-office hours, as a teleworking intern, using the employer's common internal platform and communication tools, is closely related to the distance learner working asynchronous in a virtual team of students on a field-driven assignment with frequent communication with tutor and mentor at the employer.

Towards remote internships of distance students: the model of a virtual consultancy by virtual teams of students, seems very suitable, and brings students not only in close contact with the employers' professional field but also with the other team students (and their professional competences) and the academic knowledge transfer by the tutors involved.
A hidden trick of such a university based model is the terminology. Be aware to incorporate

common teleworking tools and terminology. Give the employers more recognition by using work-related terminology from their world of 'earning', than study-related terms of 'learning'.

The European project Cross Sector Virtual Mobility has been labelled "Good Practice" by the European Commission (2009). Building on the success of the Consortium of the CSVM project, "The Employability 'Clinique': Fast-Track Multiplication of Good Practice" (TEC) has been submitted to the European Commission. The TEC project is aimed to the dissemination and exploitation of the results of remote internship models.

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